

Oral History Program: Biographical Notes

**Nicholas Snowden TRAHAIR (1934 -)
Civil Engineer**

- Birth & Family:** Born in Brisbane, Queensland, 29 April, 1934. Family moved to Sydney.
- Education:** Primary Schools at Drummoyne, Gladesville and Eastwood; Fort Street Boys' High School, attained Leaving Certificate.
- Qualifications:** B.Sc. (1954); BE 1st Class Honours (1956); MEngSci (1959); PhD (1968); DEng (1994) – Sydney University.
- Memberships:** FIEAust; The American Society of Civil Engineers – Member.
- Awards:** 1976 Warren Memorial Prize of The Institution of Engineers, Australia
1977 R.W. Chapman Medal of The Institution of Engineers, Australia
1978 Building Science Forum of Australia – Book Award
1981 R.W. Chapman Medal of The Institution of Engineers, Australia
1984 R.W. Chapman Medal of The Institution of Engineers, Australia
1987 R.W. Chapman Medal of The Institution of Engineers, Australia
1994 Research Excellence Award of Sydney Division of The Institution of Engineers, Australia
Shortbridge Hardesty Prize, American Society of Civil Engineers
- Work History:** Gained cadetship with Department of Public Works, Canberra in 1953, and worked during University holidays on projects such as a water hammer analysis of Canberra water supply. In Third Year, Trahair spent six months' practical work experience with Public Works in Canberra, duties included working in the design office, accompanying Supervising Engineer to check on works in progress, road engineering, structural engineering, water supplies and similar projects.
- After completing Bachelor of Science Degree, Trahair obtained leave from Department of Public Works and spent two years on postgraduate work towards a Master of Engineering Science degree, working on flexural-torsional buckling of beam columns.
- After completing his Masters Degree, Trahair returned to Canberra for approximately two and a half years, at a time of increased demand for civil works in preparation for the planned expansion of Canberra's population; was involved in checking the structural design of an innovative new double curvature arched dam with a novel spillway which was being built as part of the new water supply; also involved in development of Canberra Lakes doing the preliminary design of concrete gravity dam and was associated with the hydraulic model study for Lakes Basin; other works included preliminary design of gravity pipeline from the dam site on the Cotter River.
- Dissatisfied with the attitude of the Public Works Department – they did not treat their engineers as professionals - Trahair accepted a position to teach Hydraulics in Professor Roderick's Department at Sydney University, returning to Sydney as a lecturer in late 1960, and the following year began teaching Hydraulics and Descriptive Geometry. At the same time he was involved in research work in the lateral buckling of

beams. As a result of the revision of the British Standard BS449, design rules had changed but little explanation of them was given, so to clarify these rules, Trahair conducted further investigative work as part of his research project.

Trahair developed an interest in writing research papers on his various research projects; about 6 or 7 were written by the time he submitted his PhD. Still teaching Hydraulics, but needing a break from PhD studies, Trahair spent a year or two in experimental work on scour patterns in rivers and energy dissipaters for dams before returning to the predictability of steel structures. Later changed to teaching structural subjects on return from study leave in the USA.

Trahair and his family went to St Louis, USA, at the end of 1967 where he did teaching and research work with Professor Ted Galambos, a leading expert in steel structures. Trahair's involvement in Australia with the Standards Committee BD1, which was preparing the new Australian standard, gave him a good understanding of the teaching code in the USA. While there, he taught 2nd Year Structures subjects and 4th Year Design subjects as well as contributing to postgraduate courses.

He returned to Sydney in 1969; by this time was a Senior Lecturer teaching structural courses and involved in more administrative work, also worked on research projects with postgraduate research students who were doing PhD's or Master's Degrees.

The following year successfully applied for an Associate Professorship which came with added responsibility and was structurally oriented. He also continued with work that resulted from his PhD.

In 1974 he took study leave in the UK where he shared research projects with David Nethercott at Sheffield University, and he also taught in the British system. On his return to Australia, he continued with teaching work, then successfully applied for Chair, following Professor Roderick's retirement in 1977. He became a Professor in 1978 and encouraged students to develop themselves as independent people.

Trahair continued his involvement with the Standards Association BD1, revising codes and preparing new versions. He was Co-Chairman of the Committee, upgrading code AS1250 and preparing new Limit State Code AS4100 until 1990, when he travelled around Australia promoting the new code to practising engineers, developing design aids, updating textbooks and producing computer programs.

The University was involved in consulting work, doing proof engineering work for Qantas at Mascot and the Gladesville Bridge project. Trahair believed the University should be more active in this field and took on more work, giving the University additional funds to take on extra research students and to purchase teaching equipment. Investigation work on silos was one of these projects.

Trahair became Head of Department following the death of Ted Davis, and then in 1984 became the Challis Professor. During his time with Sydney University, Trahair was appointed as an Associate Professor at Washington University in 1968, a similar appointment at Sheffield University in 1974-75, and was a Research Fellow for the Japanese Society for the Promotion of Science, based at Nagoya.

Trahair was awarded a Doctor of Engineering degree in 1994, and has written many papers and books on aspects of structural engineering.